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(54) Method and apparatus for annotating widgets

(57) Widgets are annotated with freeform digital ink. Rather than annotating the data displayed by widgets, annotations are made "on" the widgets themselves and stored in relation to the application and/or window they are associated with. These annotations allow users to interact with widgets without having to keep a separate hardcopy set of notes or instructions explaining how to use the widgets.

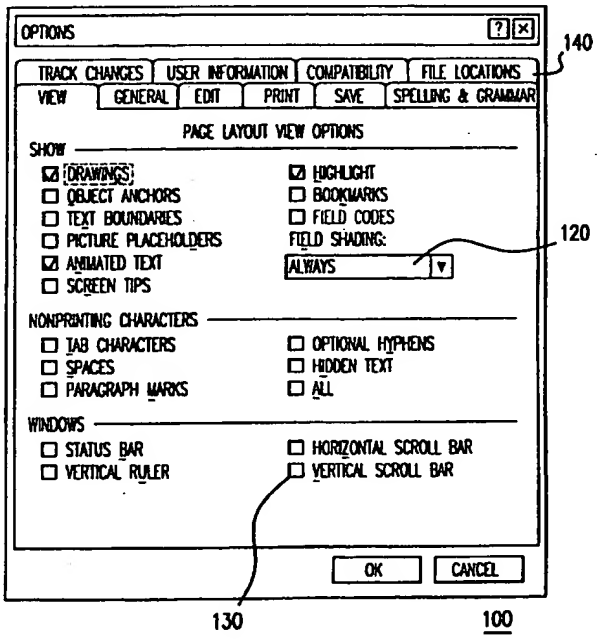

FIG.1

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Description

[0001] This inv ntion is related to annotating widgets of a graphical user interface. In particular, this invention is directed to a system and method of annotating widgets to facilitate a user's learning to use a graphical user interface.

[0002] Complex graphical user interfaces that contain windows, such as collections of menus, dialog boxes and toolbars found in everyday software applications, can be hard to learn. Users must often invoke long, precise sequences of commands or dialog box interactions to accomplish a desired task. Although on-line help manuals are commonly available, on-line help manuals often fail to clarify the problem at hand, and usually require several interactions before the desired information is obtained. While users can usually determine the correct sequence of actions through trial and error, infrequently-used command sequences are often forgotten and thus must be subsequently relearned every time they are required. Furthermore, beginners often keep long sequences of notes which correlate to and supplement actions to be performed in a given software application. However, because these notes are separate from, and not particularly well-linked to, the software application, these hardcopy notes are frequently extremely burdensome to use.

[0003] The APPLE GUIDE system is a mechanism in the computer's help system for showing a user how to accomplish specific tasks with widgets. Specifically, to explain some feature of the interface, highlights and ink marks are used to mark widgets. However, these highlights only exist during the help animation. The freeform digital ink marks cannot be created or manipulated by the user, nor are they available outside the help system.

[0004] Widgets are seen throughout today's software applications. Widgets, being placeholders for all controls in an interface, can range from windows in a graphical user interface, to simple dropdown menus, to buttons in a toolbar, to highly complex multi-level widgets that control complex functions or enable a user to select multiple options for a given application. Tracking a user's path through the maze of interfaces to achieve a desired result has become cumbersome.

[0005] This invention provides systems and methods for annotating widgets.

[0006] This invention separately provides systems and methods that allow a user to select an annotation mode, and with freeform digital ink, to record comments or notes directly on widgets.

[0007] This invention separately provides systems and methods that allow audio data to be associated with a widget and to be played by a user to, for example, direct the user how a particular function should be performed.

[0008] This invention separately provides systems and methods that allow a user to attach video data to a widget and to play back the video data to further facilitate performing a particular function.

[0009] This invention separately provides systems and methods that allow a user to annotate widgets with ASCII text.

[0010] This invention separately provides systems and methods for attaching annotations to a widget that can then be shared with other users.

[0011] In traditional freeform digital ink interfaces, annotations occur "inside" the widgets, rather than "on" the widgets. The methods and systems of this invention differ because, in the systems and methods of this invention, an annotation, e.g., freeform digital ink, is not treated as user data, e.g., a signature field, or as an annotation on user data, but rather as a method of associating comment, instructions or other annotations with the user interface. While freeform ink has been used to create content and to annotate documents, it has not been used to annotate user interface widgets. In Interactive Sketching for the Early Stages of User Interface Design, James A. Landay, Ph.D. dissertation, Report # CMU-CS-96-201, Computer Science Department, Carnagie Mellon University, Pittsburgh, PA, December 26, freeform digital ink is used to add widgets to user interface prototypes, rather than to annotate existing widgets. Specifically, the prototype widgets are the added content. In contrast, the systems and methods of this invention allow for annotating of existing widgets themselves. Furthermore, U.S. Patent Application (Attorney Docket No. 100930), herein incorporated by reference in its entirety, provides methods and systems for maintaining freeform ink annotations on changing views.

[0012] According to methods and apparatus of this invention, a user can directly annotate a widget with freeform graphical ink. Specifically, the user's annotations are recorded directly on widgets, without affecting their functionality.

[0013] These and other features and advantages of this invention are described in or are apparent from the following detailed description of the preferred embodiments.

[0014] The preferred embodiments of this invention will be described in detail, with reference to the following figures, wherein:

Fig. 1 shows an exemplary window comprising a number of widgets;

Fig. 2 shows an exemplary set of multi-level windows;

Fig. 3 shows a widget annotated according to this invention;

Fig. 4 is an exemplary widget demonstrating annotations made according to this invention;

Fig. 5 is an exemplary set of annotated widgets corresponding to the unannotated widgets shown in Fig. 2 annotated according to this invention;

Fig. 6 shows an exemplary dropdown menu annotated according to this invention;

Fig. 7 shows an exemplary dialog box;

Fig. 8 shows an exemplary annotated dialog box corresponding to the dialog box shown in Fig. 7;
Fig. 9 shows a second ex mplary dialog box;
Fig. 10 shows a second exemplary annotated dialog box corresponding to the dialog box shown in Fig. 9;
Fig. 11 shows one exemplary embodiment of a functional block diagram of a system for annotating widgets according to this invention;
Fig. 12 is an exemplary structural block diagram of a window;
Fig. 13 is an exemplary structural block diagram of a widget annotated according to this invention;
Fig. 14 shows an audio annotation added to a widget according to this invention;
Fig. 15 shows a video annotation added to a widget according to this invention;
Fig. 16 is a third exemplary annotated widget annotated according to this invention;
Fig. 17 is a flowchart outlining one exemplary method for annotating a widget according to this invention; and
Fig. 18 is a flowchart outlining another exemplary method for displaying an annotated widget according to this invention.

[0015] To annotate widgets, the systems and methods of this invention associate and store a user's annotations corresponding to one or more particular widgets. Fig. 1 is an exemplary window 100 of a graphical user interface. Common elements, i.e. widgets, within a window are dropdown menus 120, checkboxes 130, and tabs 140. Widgets within the window, such as the widgets shown in Fig. 1, are used to specify certain criteria of a desired or selected function. Although the window 100 shown in Fig. 1 is a simple example, windows can become highly complicated and contain hundreds of widgets corresponding to control options. Fig. 2 illustrates an exemplary multi-leveled window containing a first level window 210, a second level window 220 and a third level window 230. Clearly, with the quantity of information provided to a user in this context, it would be easy for the user to forget to or be unable to recognize the desired function.

[0016] The systems and methods of this invention provide for annotating these widgets, as shown in Fig. 3. Specifically, the annotated window 300 of Fig. 3 is an annotated version of the window 100 illustrated in Fig. 1. By way of example, the user has indicated in an annotation 310 added to in the window 300 that the vertical ruler is "good for column inches," and in an annotation 320 that certain scrollbars are not needed for the SCROLLPOINT mouse. Other annotations 330-360 have been added to the widget 300 to provide additional information about the widget 300 to the user.

[0017] Fig. 4 is an exemplary window 400 which contains an annotation 410 that indicates a course of action to be taken before a particular function is performed.

[0018] Fig. 5 is an exemplary cascaded set of multi-level windows 500, comprising windows 510-530 which have been annotated to direct a user through sequential events. Specifically, when a certain featur of the first level window 510 is selected, the subsequent window 520 is displayed. Again the user is directed via annotations added to the window 520 to a particular location within the window 520. Upon selecting a function within the annotated window 520, the user can then be directed to the annotated or highlighted function in the window 530.

[0019] Fig. 6 illustrates an annotated dropdown menu 600. Specifically, the annotation 607 illustrates the circled menu item should be selected for insertion of a picture. Annotation 605 highlights that "caption" adds a caption to an inserted picture. Through the above examples, it is clear that the annotations added according to this invention are not limited to any particular type of window or graphical user interface, but rather are applicable to all widgets.

[0020] As previously mentioned, the methods and systems of this invention allow for annotating widgets themselves, rather than for annotating the data the widgets contain. This is illustrated with reference to Fig. 7-10. Fig. 7 shows a print dialog box for a particular printer. The displayed data 655 corresponds to the particular selected printer. Fig. 8 shows annotations 660 and 662 that have been made to the print dialog box of Fig. 7.

[0021] Fig. 9 shows the same print dialog box for another printer. The displayed data 665 corresponds to this second selected printer. Fig. 10 shows the same annotations 670 and 672 that have been made to the print dialog boxes of Figs. 8 and 9.

[0022] Fig. 11 is a functional block diagram illustrating one embodiment of a widget annotation system 700 according to this invention. As shown in Fig. 11, the widget annotation system 700 comprises a user input device 710, such as a mouse, pen or a keyboard, a mode selector 720, a widget annotation database 730, an annotation manager 740, an annotation renderer 745, a display 750 that displays a widget 760 to be, or that has been, annotated, and a window manager 755.

[0023] A user, through the user input device 710, interacts with the system 700 to annotate the widget 760. The annotation manager 740 monitors annotations made to the widget 760. Once an annotation is made, the annotation manager 740 saves the annotation information with the associated unique widget identifier in the widget annotation database 730. Upon a subsequent display of the same widget 760. the annotation manager 740 accesses the annotations, if any, from the widget annotation database 730, and the annotation renderer 745 displays the annotations.

[0024] The widget annotation database 730 stores uniqu widget identifiers with corresponding annotations. Th uniqu widget identifier as used in this application comprises an application identifier, a widget identifier and an optional user identifier. The application identifier identifies a window manager or an application.

The widget identifier comprises a static resource identifier and/or an identifier maintained dynamically by an application or window manager. The optional user identifier uniquely identifies a user of a system.

[0025] The mode selector 720 controls the type of annotation mode selected by the user. The display 750 can be a monitor or other comparable display device that is capable of displaying widgets 760.

[0026] Fig. 12 is a structural representation of an exemplary window 800. The window includes a number of widgets 810 that represent all the visual elements forming the window 800.

[0027] As shown in Fig. 13, annotations 910 to the window 800 appear as annotations or markings on one or more of the individual widgets 810. These annotations or markings 910 do not alter the widget itself, but rather are "layered" over the assemblage of widgets 810 that form the window 800.

[0028] Figs. 14 and 15 illustrate additional exemplary types of annotations that can be added to a widget according to this invention. For example, the window 800 shown in Fig. 14 contains an icon 1000 representing an audio segment added or attached to a widget 1010 within the window 800. As with freeform ink annotations, the icon 1000 is displayed in conjunction with the associated annotated widget. However, in addition to the visual content associated with the icon itself, the icon represents a link, such as a hyperlink or pointer, to an audio file. This audio file may be a preexisting audio file, such as a "wav" file. Alternatively, the audio file could be recorded by a user specifically for the current annotation. For example, when a user decides to annotate a widget, the user could be prompted for the type of annotation desired. If the user selects "audio annotation," for example, the system could record the user's audio clip or prompt the user for an already existing audio clip file. During playback, the user simply selects the icon 1000, for example with a mouse click. In response, an audio clip is played to the user relating to the content of the widget 1010 to which the icon 1000 has been associated. Fig. 15 illustrates a video icon 1100 associated with a widget 1110. As with audio annotations, video annotations can be recorded or replayed when the user indicates a video or multimedia annotation is desired, or selects the video icon 1100, respectively.

[0029] Fig. 16 is another exemplary annotated window 1200, illustrating that annotations are not limited to one particular widget, but can be strewn throughout the entire window.

[0030] In operation, a user selects the mode in which annotations are to be performed. For example, one mode can be activated by simply inking over the nonactive portions of the window. Alternatively, if annotations are desired within an active element, a user can temporarily enter a manual mod which would disable the active components of the window and allow annotations to be placed anywhere within the window.

[0031] In either of these modes, the annotations are recorded identically in the widget annotation database. For example, in automatic mode, if the annotation, e.g., inking process, event occurs over an active widget, i. ., a radio button, no annotation, e.g., ink mark, is made. If a selection device controlled by the user, e.g., a mouse pointer, passes over an active widget, e.g., a radio button, that active widget performs normally. Alternatively, if no widget responds to the annotation event, an annotation mode can be triggered.

[0032] A second exemplary embodiment of the methods according to this invention includes an annotation button in the application environment. When the button is selected, the widgets are disabled, the cursor optionally changes to indicate the annotation mode, and user-selected events produce annotations.

[0033] Digital ink can be used to embody the user's annotations. For example, the freeform digital ink can be used to highlight text or to actually change the characteristics of the text, e.g., underlining. Furthermore, annotations is not limited to actual written annotations by the user. The annotations may encompass audio or video data, animated graphics, and/or may be either transparent or opaque, depending on the user's desire. Furthermore, it should be understood that the annotations to the widget need not be static. Active elements or hyperlinks can also be included to further broaden the usefulness of the annotations.

[0034] All annotations to the widget are stored in the widget annotation database 730. This widget annotation database 730 need not be integral to one particular user's application and one particular user's annotations. By storing the unique widget identifiers, the widget annotation database 730 can be shared with other users so they can use a first user's annotations. The receiving user can preview and/or ignore the previous annotations, can replace the existing annotations with the new annotations, and/or add new annotations, or merge the two sets of annotations.

[0035] Fig. 17 is a flowchart outlining one exemplary method for annotating a widget according to this invention. Control begins in step S100, and then continues to step S200, where a widget is displayed. With the widget displayed, a user has the option of annotating the widget. Thus, in step S300, a user determines whether automatic or manual annotation is desired. If automatic operation is desired, control continues to step S400. Otherwise, if manual annotation is desired, control jumps to step S700.

[0036] In step S400, the particular annotation type desired is selected. This can range, for example, from font attributes, to text attributes, to line thickness and/or color, to insertion of audio or video elements, plain text, highlighting or other type of freeform digital ink. Then, in step S500, the actual annotations are created and added by the user relative to the widget. Next, in step S600, the added annotations are associated with the widget and saved. Control then continues to step S700.

[0037] In step S700, the user is queried whether an-

other annotation is desired. If another annotation is desired, control jumps back to step S300. If no further annotations are desired, control continues to step S1300, where the control sequence ends.

[0038] In step S800, the manual annotation mode is activated. This manual annotation mode allows user complete control over the type and placement of the annotations. Next, in step S900, as with step S400, the user selects the annotation type. Then, in step S1000, the user creates and adds the annotation relative to the widget. Control then continues to step S1100.

[0039] In step S1100, the annotations are associated with the corresponding widgets and are saved. Then, in step S1200, the user determines if additional annotations are desired. If so, control jumps back to step S900. Otherwise, control continues to step S1300 where the control routine ends.

[0040] Fig. 18 is a flowchart outlining one exemplary embodiment of a method for displaying an annotated widget according to this invention. Control begins in step S3000, and then continues to step S3100, where a widget is displayed. Then, in step S3200, a determination is made as to whether the displayed widget is annotated. If the displayed widget is annotated, control jumps to step S3210 Otherwise, control continues to step S3300. In step S3300, the control sequence ends.

[0041] In step S3210, the unique widget identifier is determined. Next, in step S3220, the corresponding annotation is loaded. Then, in step S3230, the annotation is displayed. Control then passes to step S3300, where the control sequence ends.

[0042] As shown in Fig. 11, the widget annotation system is preferably implemented on one or more programmed general purpose computers. However, the widget annotation system can also be implemented on a special purpose computer, a programmed microprocessor or microcontroller and peripheral integrated circuit elements, an ASIC or other integrated circuit, a digital single processor, a hardwired electronic or logic circuit such as a discrete circuit, a programmable logic device such as a PLD, PLA, PGA, FPGA or PAL, or the like. In general, any device, capable of implementing a finite state machine that is in turn capable of implementing the flowcharts shown in Figs. 17-19, can be used to implement the widget annotation system according to this invention.

Claims

1. A method for annotating a widget comprising:

   enabling an annotation mode that allows at least one annotation that is displayable with a widget to be made relative to that widget; and
   associating the at least one annotation with that widget.

2. The method of claim 1, wherein the annotations remain associated with the widget even if information within the widget chang s.

3. The method of claim 1 or claim 2, further comprising:

   determining a location of a cursor relative to the at least one widget; and
   enabling an annotation mode based on the determined location.

4. The method of claim 3, wherein the annotation mode is activated if the cursor is located in a non-active portion of the at least one widget.

5. The method of claim 3 or claim 4, wherein the annotation mode is deactivated if the cursor is located in an active portion of the at least one widget.

6. The method of any of the preceding claims, wherein associating the at least one annotation with the widget comprises associating a unique widget identifier, which comprises an application identifier, with the at least one annotation.

7. The method of any of claims 1 to 5, wherein associating the at least one annotation with the widget comprises associating a unique widget identifier, which comprises a widget identifier, with the at least one annotation.

8. The method of any of claims 1 to 5, wherein associating the at least one annotation with the widget comprises associating a unique widget identifier, which comprises a user identifier, with the at least one annotation.

9. A method for displaying a widget, comprising:

   identifying at least one annotation associated with the widget that is to be displayed with the widget; and
   displaying the widget and the at least one associated annotation.

10. The method of claim 9, further comprising updating data within the widget.

11. The method of claim 9 or claim 10, wherein identifying the at least one associated annotation comprises:

    reading at least one unique widget identifier; and
    leading at least one corresponding annotation.

12. A widget annotation system, comprising:

an input device that receives at least one annotation for at least one widget; and
a widget annotation database that stores the at least one annotation associated with the at least one widget.

13. The system of claim 12, further comprising a mode selector that sets an annotation mode.

14. The system of claim 13, wherein the annotation mode is determined by a location of a cursor relative to the at least one displayed widget.

15. The system of any of claims 12 to 14, wherein the widget annotation database stores at least one unique widget identifier with at least one corresponding annotation.

16. The system of any of claims 12 to 15, further comprising a widget display device on which the at least one widget is displayed.

17. A system that renders annotations associated with a widget, comprising:

a widget annotation database that stores at least one annotation associated with at least one widget; and
a widget display device that displays the widget to be displayed and the at least one associated annotation.

18. The system of claim 17, wherein an application updates information in the widget to be displayed.

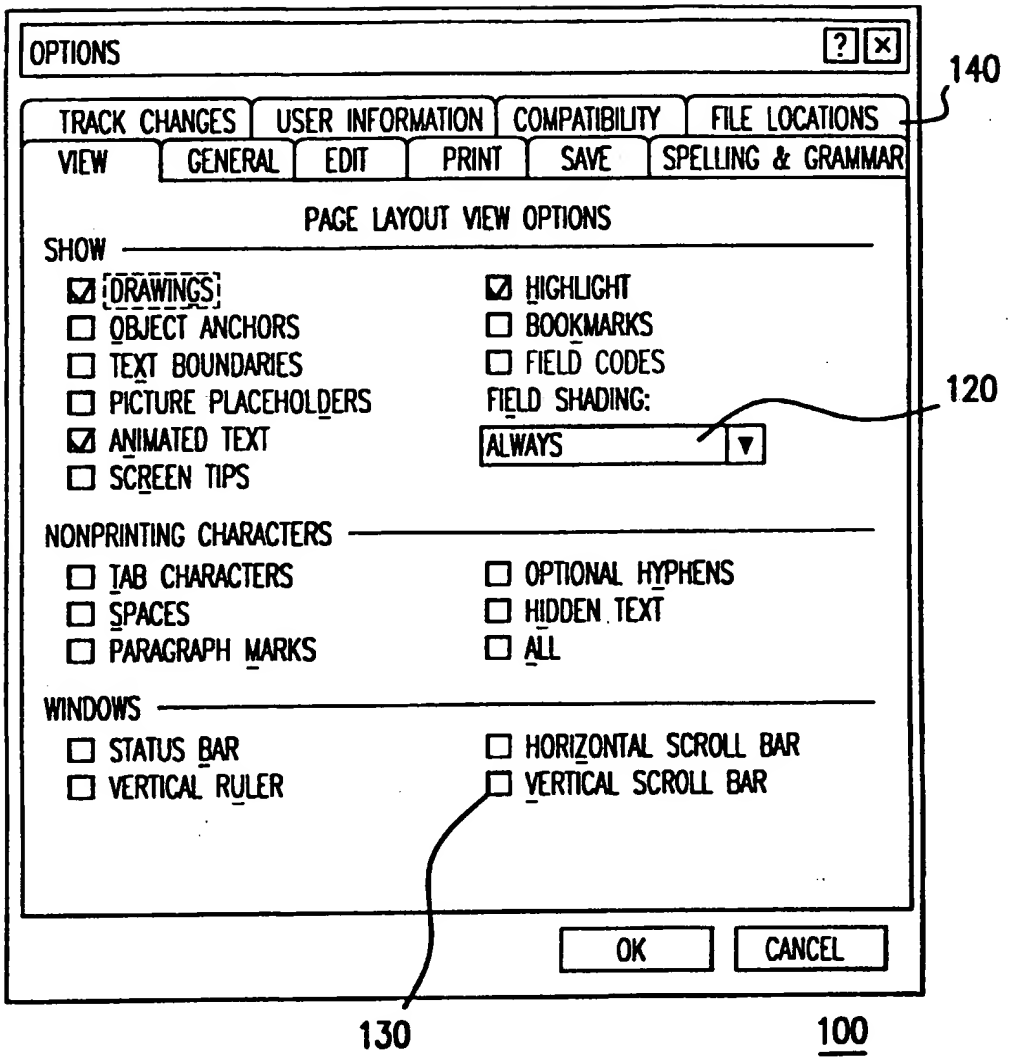

OPTIONS
TRACK CHANGES
USER INFORMATION
COMPATIBILITY
FILE LOCATIONS
VIEW
GENERAL
EDIT
PRINT
SAVE
SPELLING & GRAMMAR
PAGE LAYOUT VIEW OPTIONS
SHOW
DRAWINGS
OBJECT ANCHORS
TEXT BOUNDARIES
PICTURE PLACEHOLDERS
ANIMATED TEXT
SCREEN TIPS
HIGHLIGHT
BOOKMARKS
FIELD CODES
FIELD SHADING:
ALWAYS
NONPRINTING CHARACTERS
TAB CHARACTERS
SPACES
PARAGRAPH MARKS
OPTIONAL HYPHENS
HIDDEN TEXT
ALL
WINDOWS
STATUS BAR
VERTICAL RULER
HORIZONTAL SCROLL BAR
VERTICAL SCROLL BAR
OK
CANCEL
140
120
130
100

FIG.1

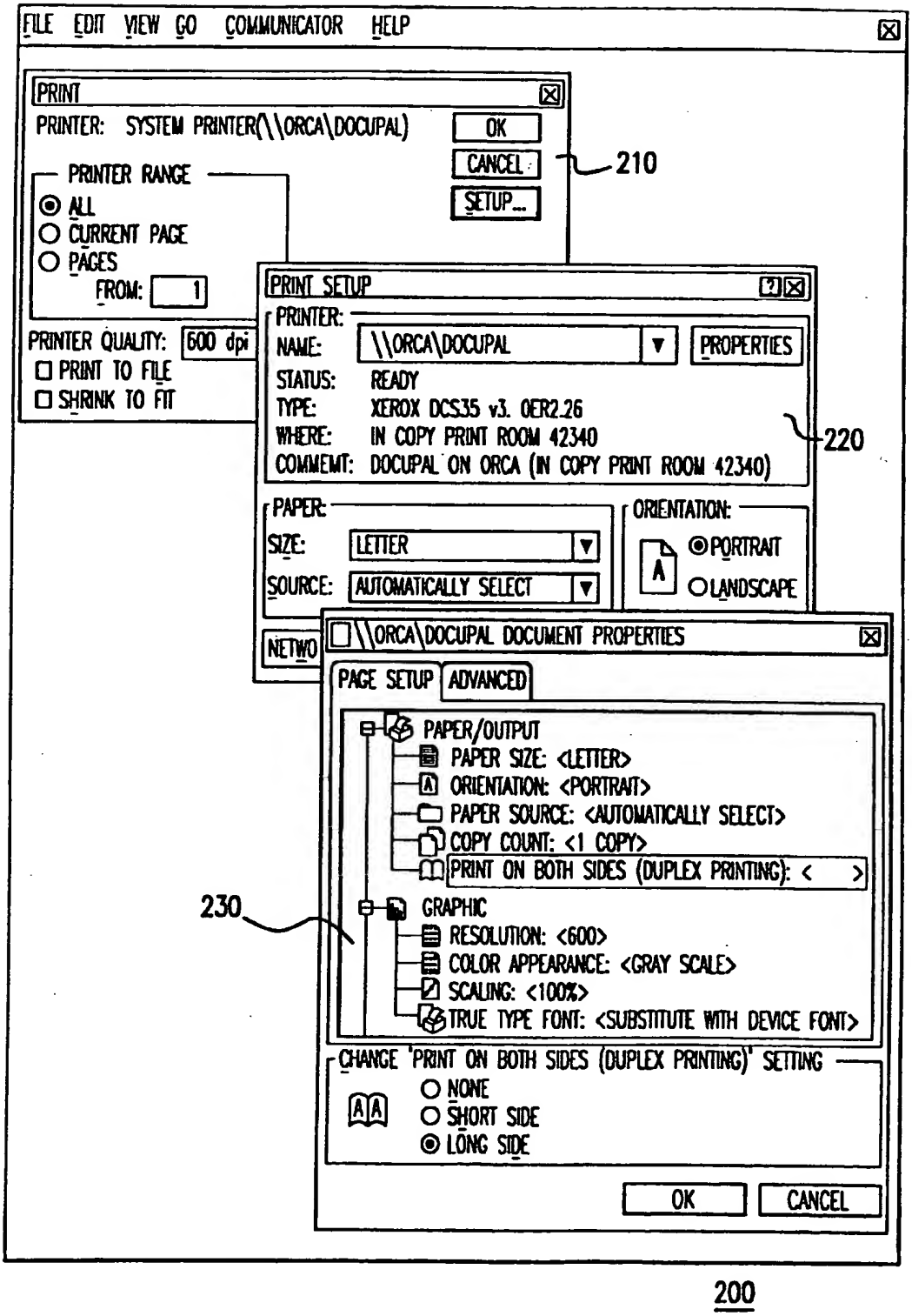
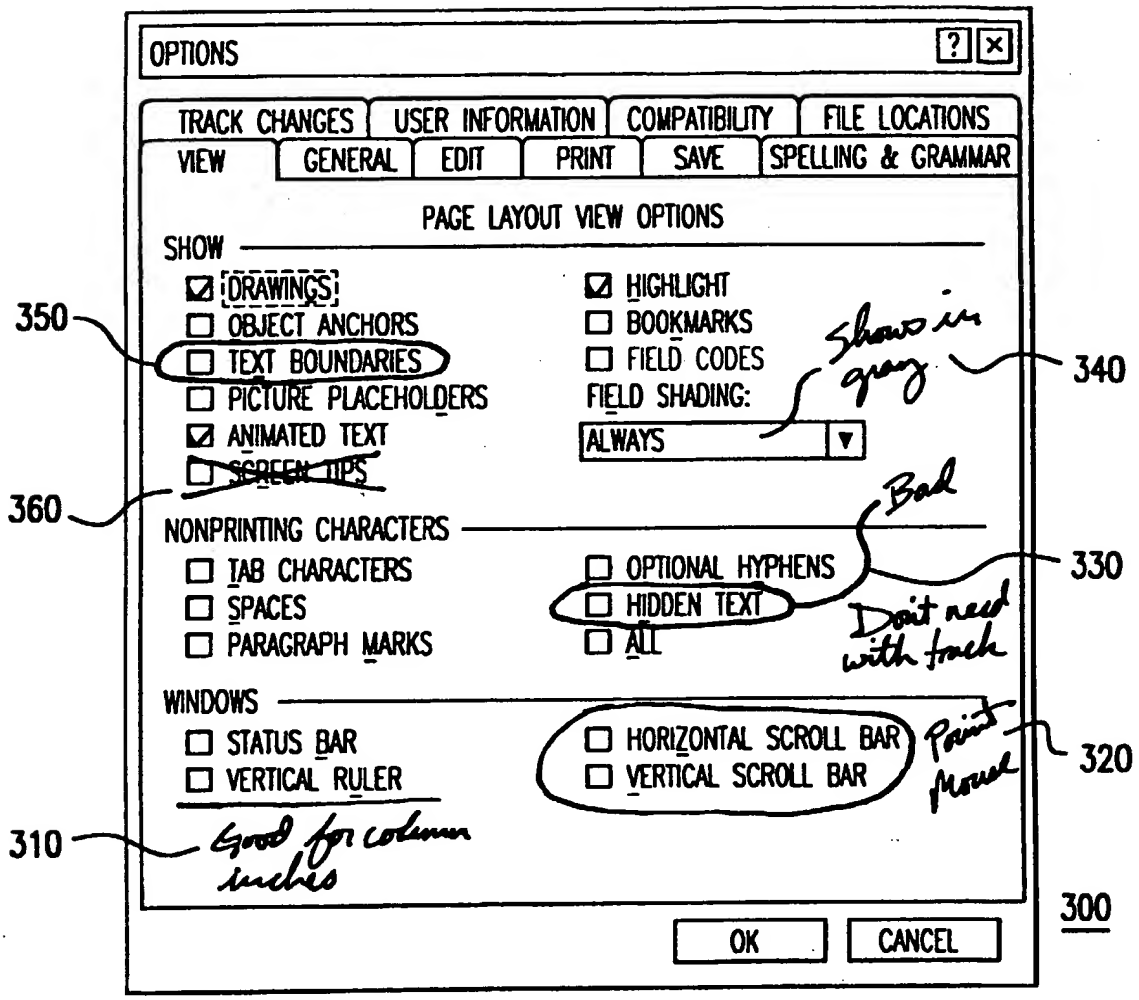

FILE EDIT VIEW GO COMMUNICATOR HELP
PRINT
PRINTER: SYSTEM PRINTER(\\ORCA\DOCUPAL)
OK
CANCEL
SETUP...
210
PRINTER RANGE
ALL
CURRENT PAGE
PAGES
FROM: 1
PRINTER QUALITY: 600 dpi
PRINT TO FILE
SHRINK TO FIT
PRINT SETUP
PRINTER:
NAME: \\ORCA\DOCUPAL
PROPERTIES
STATUS: READY
TYPE: XEROX DCS35 v3. 0ER2.26
WHERE: IN COPY PRINT ROOM 42340
COMMENT: DOCUPAL ON ORCA (IN COPY PRINT ROOM 42340)
220
PAPER:
SIZE: LETTER
SOURCE: AUTOMATICALLY SELECT
ORIENTATION:
PORTRAIT
LANDSCAPE
NETWO
\\ORCA\DOCUPAL DOCUMENT PROPERTIES
PAGE SETUP
ADVANCED
PAPER/OUTPUT
PAPER SIZE: <LETTER>
ORIENTATION: <PORTRAIT>
PAPER SOURCE: <AUTOMATICALLY SELECT>
COPY COUNT: <1 COPY>
PRINT ON BOTH SIDES (DUPLEX PRINTING): <
230
GRAPHIC
RESOLUTION: <600>
COLOR APPEARANCE: <GRAY SCALE>
SCALING: <100%>
TRUE TYPE FONT: <SUBSTITUTE WITH DEVICE FONT>
CHANGE 'PRINT ON BOTH SIDES (DUPLEX PRINTING)' SETTING
NONE
SHORT SIDE
LONG SIDE
OK
CANCEL
200

FIG.2


OPTIONS
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SPELLING & GRAMMAR
PAGE LAYOUT VIEW OPTIONS
SHOW
DRAWINGS
OBJECT ANCHORS
TEXT BOUNDARIES
PICTURE PLACEHOLDERS
ANIMATED TEXT
SCREEN TIPS
HIGHLIGHT
BOOKMARKS
FIELD CODES
FIELD SHADING:
ALWAYS
NONPRINTING CHARACTERS
TAB CHARACTERS
SPACES
PARAGRAPH MARKS
OPTIONAL HYPHENS
HIDDEN TEXT
ALL
WINDOWS
STATUS BAR
VERTICAL RULER
HORIZONTAL SCROLL BAR
VERTICAL SCROLL BAR
OK
CANCEL
350
360
340
330
320
310
300
Show in gray
Bad
Don't need with track
Point mouse
Good for column inches

FIG.3

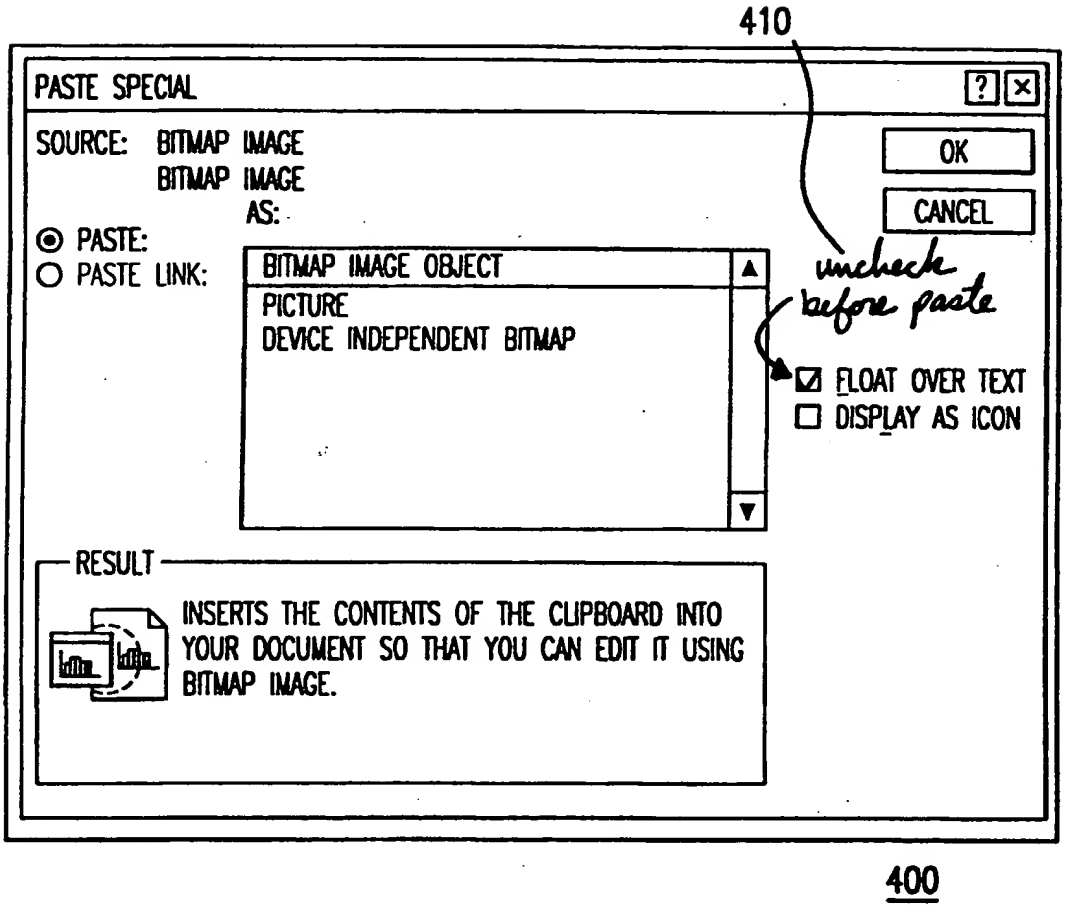
410
PASTE SPECIAL
SOURCE: BITMAP IMAGE
BITMAP IMAGE
AS:
OK
CANCEL
PASTE:
PASTE LINK:
BITMAP IMAGE OBJECT
PICTURE
DEVICE INDEPENDENT BITMAP
uncheck before paste
FLOAT OVER TEXT
DISPLAY AS ICON
RESULT
INSERTS THE CONTENTS OF THE CLIPBOARD INTO YOUR DOCUMENT SO THAT YOU CAN EDIT IT USING BITMAP IMAGE.
400

FIG.4

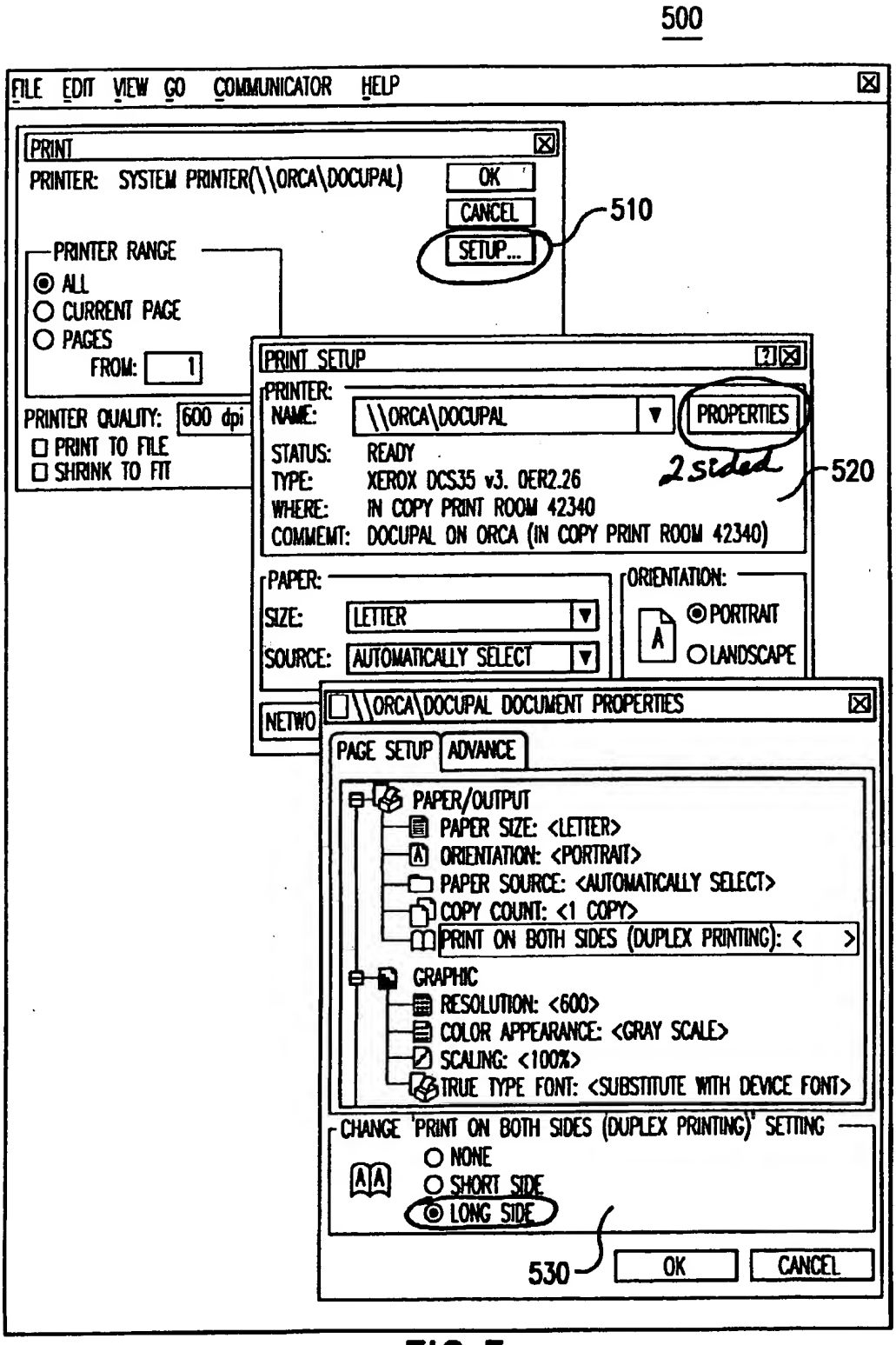
500
FILE EDIT VIEW GO COMMUNICATOR HELP
PRINT
PRINTER: SYSTEM PRINTER(\\ORCA\DOCUPAL)
OK
CANCEL
SETUP...
510
PRINTER RANGE
ALL
CURRENT PAGE
PAGES
FROM: 1
PRINTER QUALITY: 600 dpi
PRINT TO FILE
SHRINK TO FIT
PRINT SETUP
PRINTER:
NAME: \\ORCA\DOCUPAL
PROPERTIES
STATUS: READY
TYPE: XEROX DCS35 v3. OER2.26
2 sided
520
WHERE: IN COPY PRINT ROOM 42340
COMMENT: DOCUPAL ON ORCA (IN COPY PRINT ROOM 42340)
PAPER:
SIZE: LETTER
SOURCE: AUTOMATICALLY SELECT
ORIENTATION:
PORTRAIT
LANDSCAPE
NETWO
\\ORCA\DOCUPAL DOCUMENT PROPERTIES
PAGE SETUP
ADVANCE
PAPER/OUTPUT
PAPER SIZE: <LETTER>
ORIENTATION: <PORTRAIT>
PAPER SOURCE: <AUTOMATICALLY SELECT>
COPY COUNT: <1 COPY>
PRINT ON BOTH SIDES (DUPLEX PRINTING): <
GRAPHIC
RESOLUTION: <600>
COLOR APPEARANCE: <GRAY SCALE>
SCALING: <100%>
TRUE TYPE FONT: <SUBSTITUTE WITH DEVICE FONT>
CHANGE 'PRINT ON BOTH SIDES (DUPLEX PRINTING)' SETTING
NONE
SHORT SIDE
LONG SIDE
530
OK
CANCEL

FIG.5

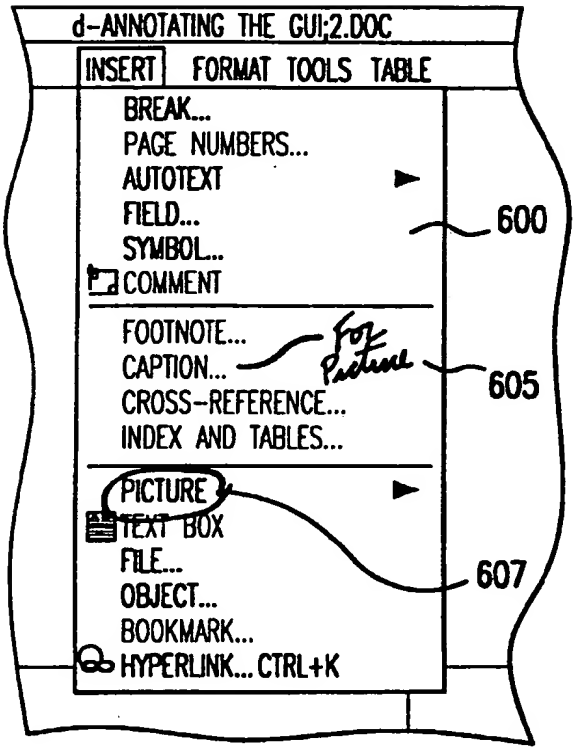
d-ANNOTATING THE GUI;2.DOC
INSERT FORMAT TOOLS TABLE
BREAK...
PAGE NUMBERS...
AUTOTEXT
FIELD...
SYMBOL...
COMMENT
FOOTNOTE...
CAPTION...
For Picture
CROSS-REFERENCE...
INDEX AND TABLES...
PICTURE
TEXT BOX
FILE...
OBJECT...
BOOKMARK...
HYPERLINK... CTRL+K
600
605
607

FIG.6

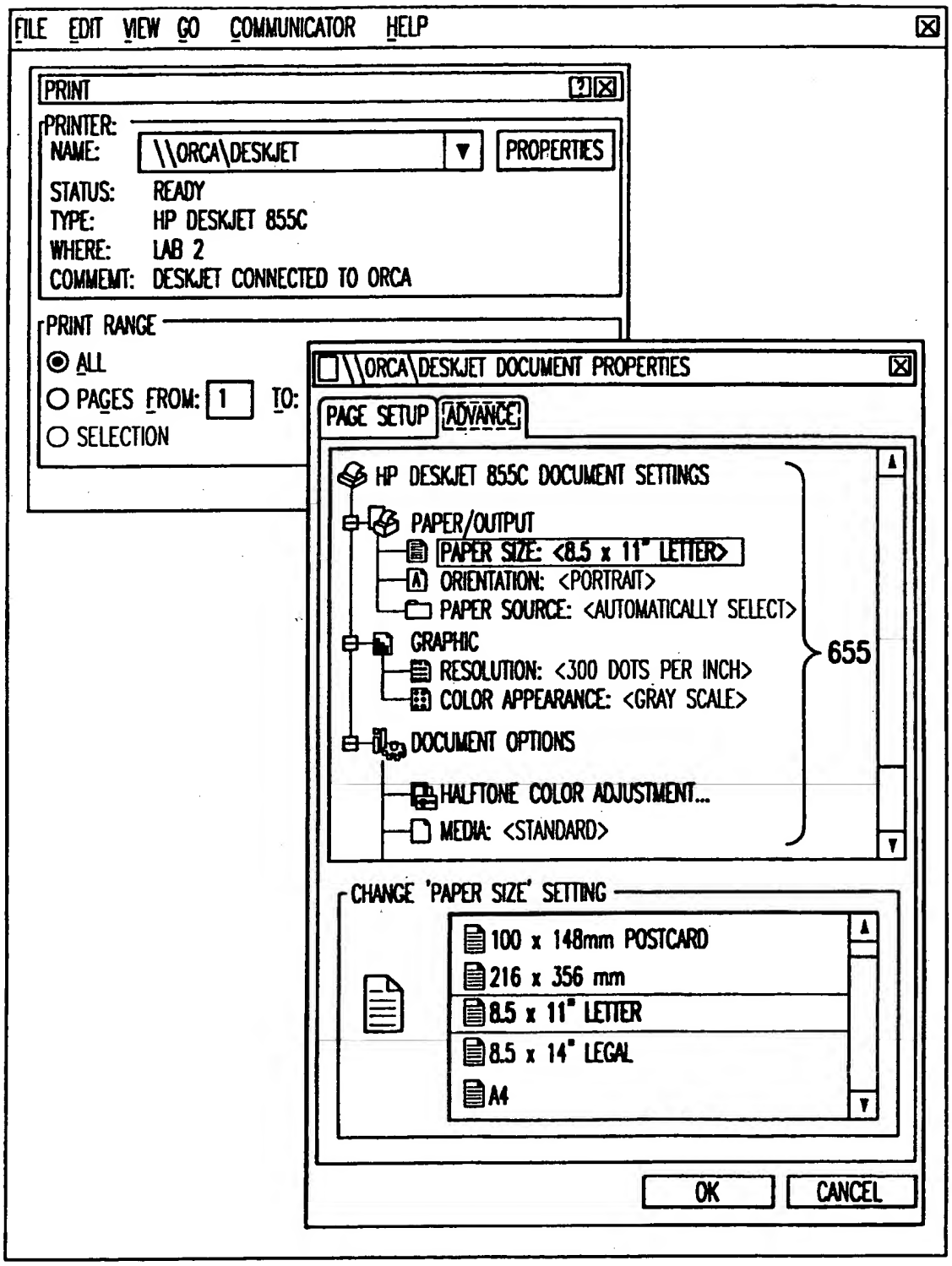
FILE EDIT VIEW GO COMMUNICATOR HELP
PRINT
PRINTER:
NAME:
\\ORCA\DESKJET
PROPERTIES
STATUS: READY
TYPE: HP DESKJET 855C
WHERE: LAB 2
COMMENT: DESKJET CONNECTED TO ORCA
PRINT RANGE
ALL
PAGES FROM: 1 TO:
SELECTION
\\ORCA\DESKJET DOCUMENT PROPERTIES
PAGE SETUP
ADVANCE
HP DESKJET 855C DOCUMENT SETTINGS
PAPER/OUTPUT
PAPER SIZE: <8.5 x 11" LETTER>
ORIENTATION: <PORTRAIT>
PAPER SOURCE: <AUTOMATICALLY SELECT>
GRAPHIC
RESOLUTION: <300 DOTS PER INCH>
COLOR APPEARANCE: <GRAY SCALE>
DOCUMENT OPTIONS
HALFTONE COLOR ADJUSTMENT...
MEDIA: <STANDARD>
655
CHANGE 'PAPER SIZE' SETTING
100 x 148mm POSTCARD
216 x 356 mm
8.5 x 11" LETTER
8.5 x 14" LEGAL
A4
OK
CANCEL

FIG.7

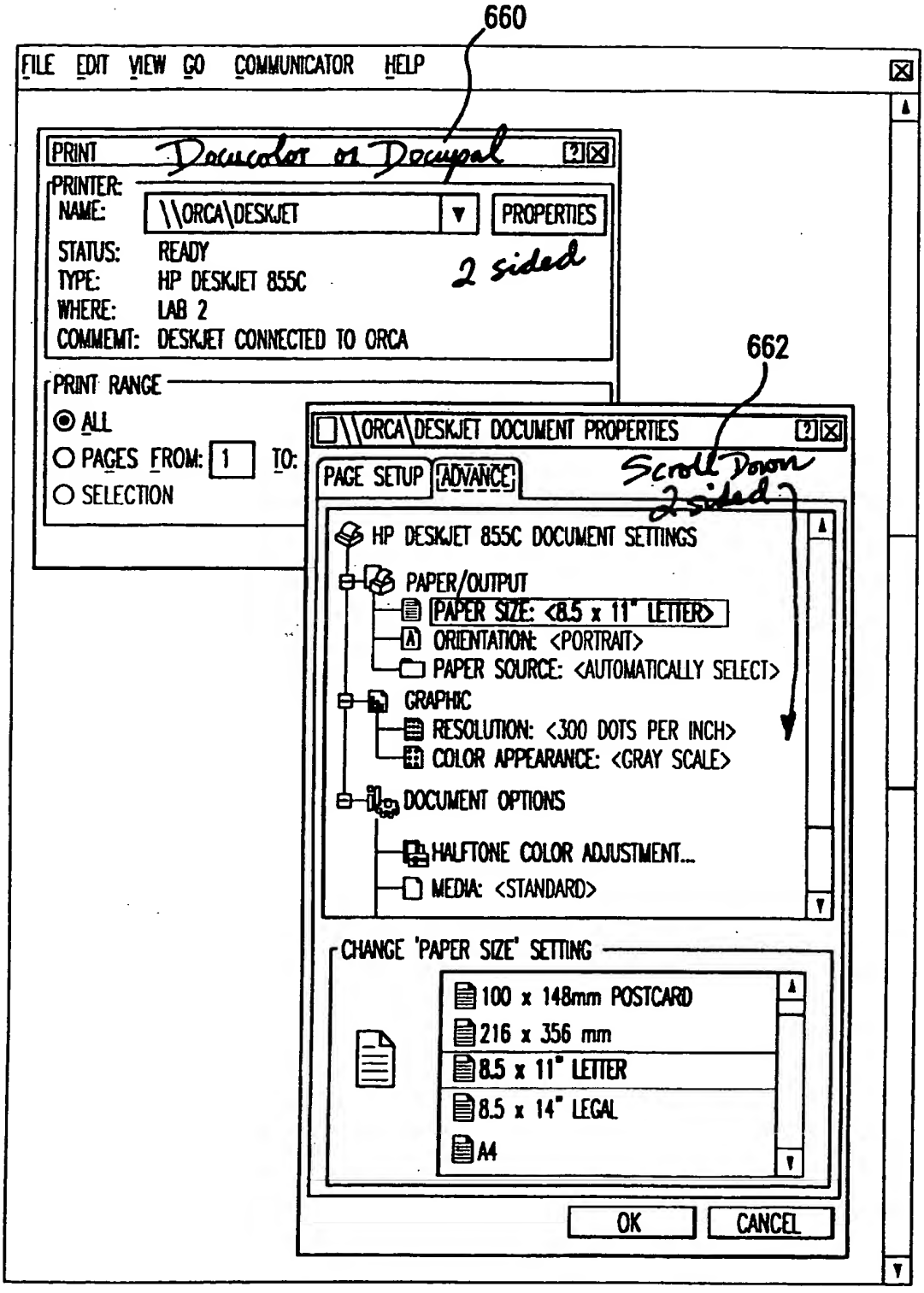
660
FILE EDIT VIEW GO COMMUNICATOR HELP
PRINT
Docucolor on Docupal
PRINTER:
NAME:
\\ORCA\DESKJET
PROPERTIES
STATUS: READY
TYPE: HP DESKJET 855C
WHERE: LAB 2
COMMENT: DESKJET CONNECTED TO ORCA
2 sided
PRINT RANGE
ALL
PAGES FROM: 1 TO:
SELECTION
662
\\ORCA\DESKJET DOCUMENT PROPERTIES
PAGE SETUP
ADVANCE
Scroll Down
2 sided
HP DESKJET 855C DOCUMENT SETTINGS
PAPER/OUTPUT
PAPER SIZE: <8.5 x 11" LETTER>
ORIENTATION: <PORTRAIT>
PAPER SOURCE: <AUTOMATICALLY SELECT>
GRAPHIC
RESOLUTION: <300 DOTS PER INCH>
COLOR APPEARANCE: <GRAY SCALE>
DOCUMENT OPTIONS
HALFTONE COLOR ADJUSTMENT...
MEDIA: <STANDARD>
CHANGE 'PAPER SIZE' SETTING
100 x 148mm POSTCARD
216 x 356 mm
8.5 x 11" LETTER
8.5 x 14" LEGAL
A4
OK
CANCEL

FIG.8

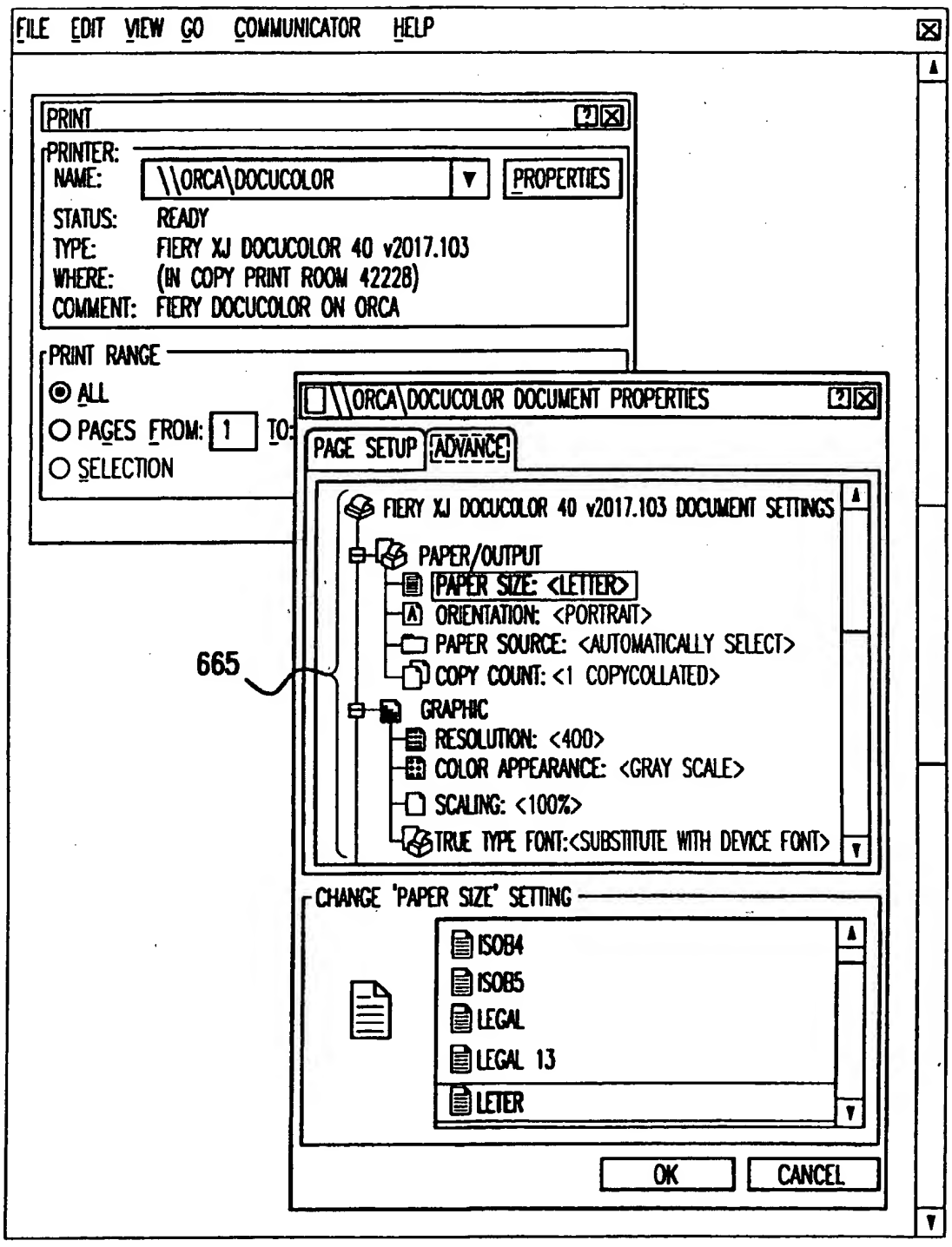
FILE EDIT VIEW GO COMMUNICATOR HELP
PRINT
PRINTER:
NAME: \\ORCA\DOCUCOLOR
PROPERTIES
STATUS: READY
TYPE: FIERY XJ DOCUCOLOR 40 v2017.103
WHERE: (IN COPY PRINT ROOM 42228)
COMMENT: FIERY DOCUCOLOR ON ORCA
PRINT RANGE
ALL
PAGES FROM: 1 TO:
SELECTION
\\ORCA\DOCUCOLOR DOCUMENT PROPERTIES
PAGE SETUP
ADVANCE
FIERY XJ DOCUCOLOR 40 v2017.103 DOCUMENT SETTINGS
PAPER/OUTPUT
PAPER SIZE: <LETTER>
ORIENTATION: <PORTRAIT>
PAPER SOURCE: <AUTOMATICALLY SELECT>
COPY COUNT: <1 COPYCOLLATED>
665
GRAPHIC
RESOLUTION: <400>
COLOR APPEARANCE: <GRAY SCALE>
SCALING: <100%>
TRUE TYPE FONT:<SUBSTITUTE WITH DEVICE FONT>
CHANGE 'PAPER SIZE' SETTING
ISOB4
ISOB5
LEGAL
LEGAL 13
LETER
OK
CANCEL

FIG.9

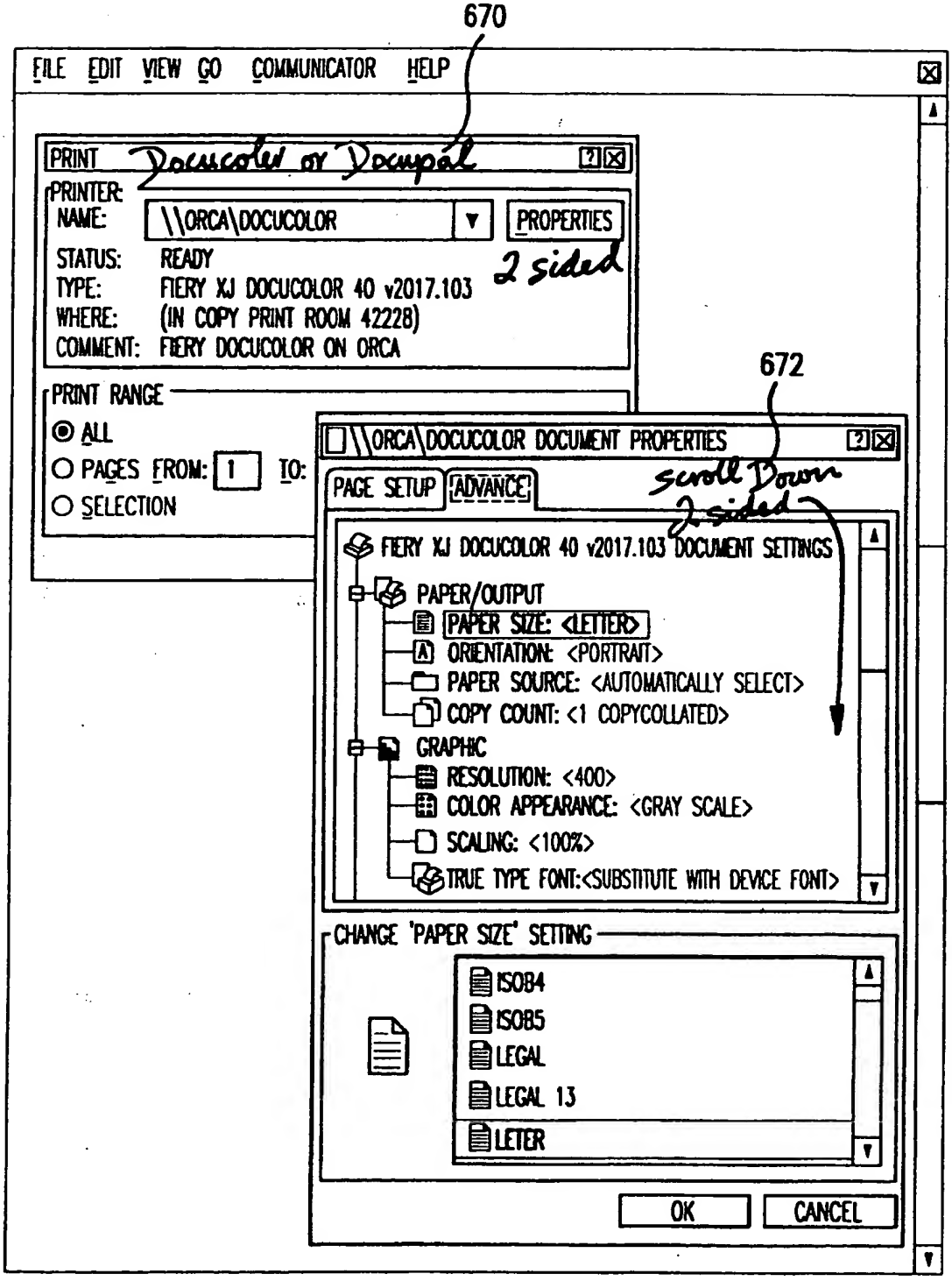
670
FILE EDIT VIEW GO COMMUNICATOR HELP
PRINT Docucolor or Docupal
PRINTER:
NAME: \\ORCA\DOCUCOLOR
PROPERTIES
STATUS: READY
TYPE: FIERY XJ DOCUCOLOR 40 v2017.103
WHERE: (IN COPY PRINT ROOM 42228)
COMMENT: FIERY DOCUCOLOR ON ORCA
2 sided
672
PRINT RANGE
ALL
PAGES FROM: 1 TO:
SELECTION
\\ORCA\DOCUCOLOR DOCUMENT PROPERTIES
PAGE SETUP ADVANCE
Scroll Down
2 sided
FIERY XJ DOCUCOLOR 40 v2017.103 DOCUMENT SETTINGS
PAPER/OUTPUT
PAPER SIZE: <LETTER>
ORIENTATION: <PORTRAIT>
PAPER SOURCE: <AUTOMATICALLY SELECT>
COPY COUNT: <1 COPYCOLLATED>
GRAPHIC
RESOLUTION: <400>
COLOR APPEARANCE: <GRAY SCALE>
SCALING: <100%>
TRUE TYPE FONT:<SUBSTITUTE WITH DEVICE FONT>
CHANGE 'PAPER SIZE' SETTING
ISOB4
ISOB5
LEGAL
LEGAL 13
LETER
OK
CANCEL

FIG.10

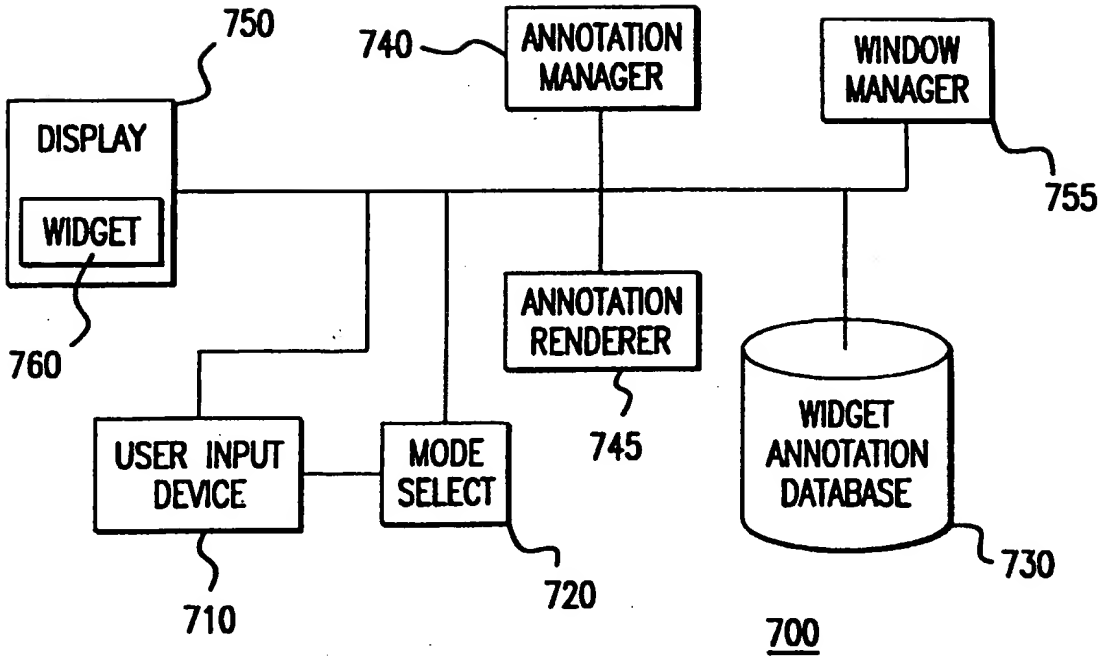
750
740
ANNOTATION MANAGER
WINDOW MANAGER
DISPLAY
WIDGET
755
760
ANNOTATION RENDERER
745
WIDGET ANNOTATION DATABASE
USER INPUT DEVICE
MODE SELECT
730
720
710
700

FIG.11

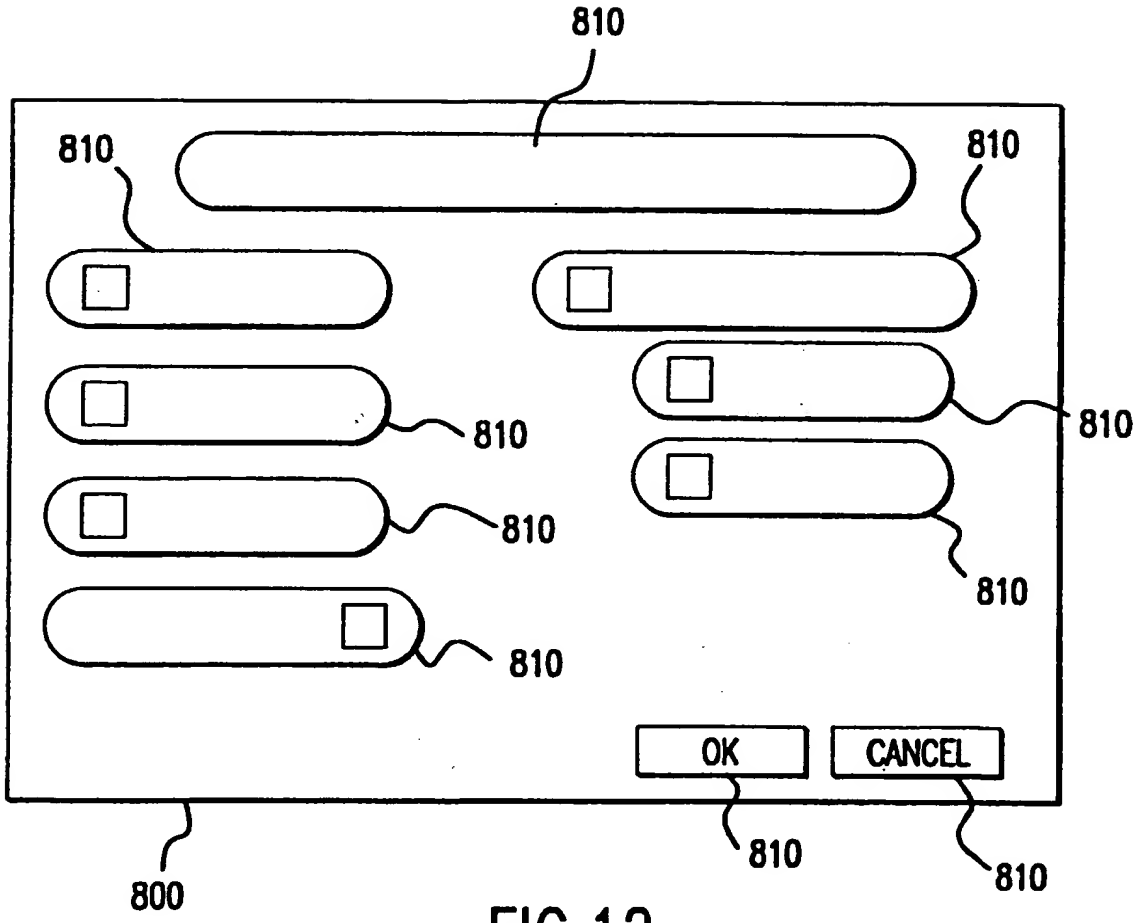

FIG.12

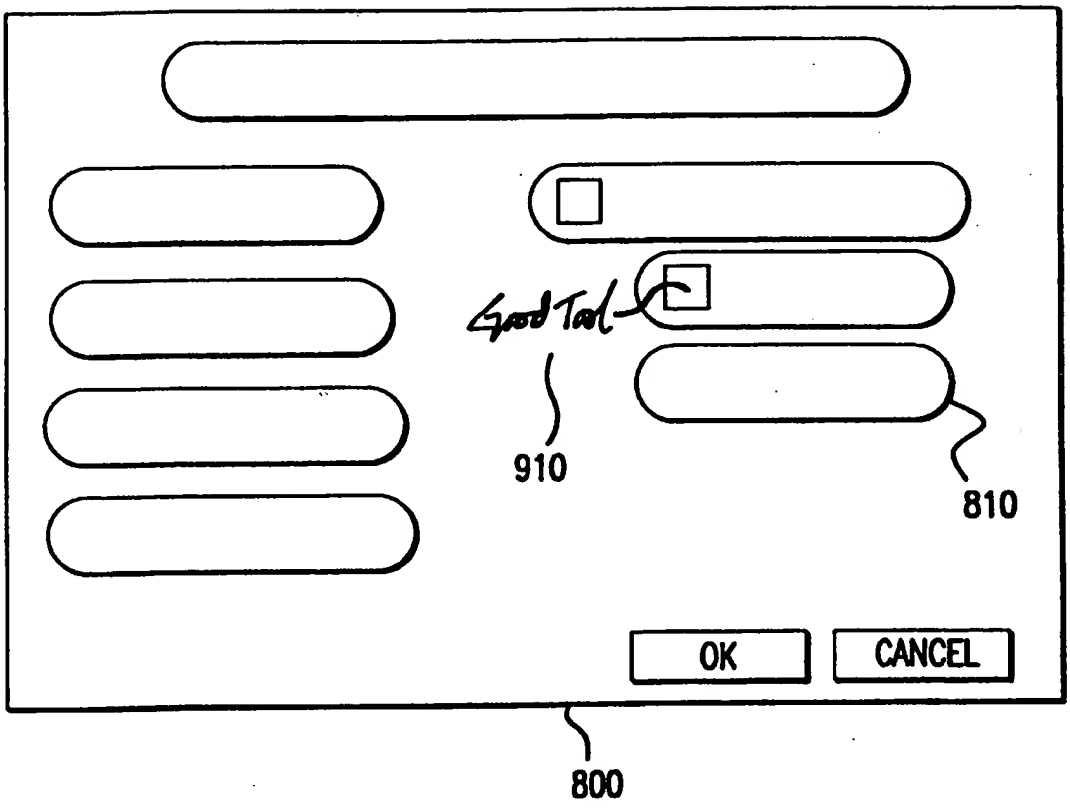

FIG.13

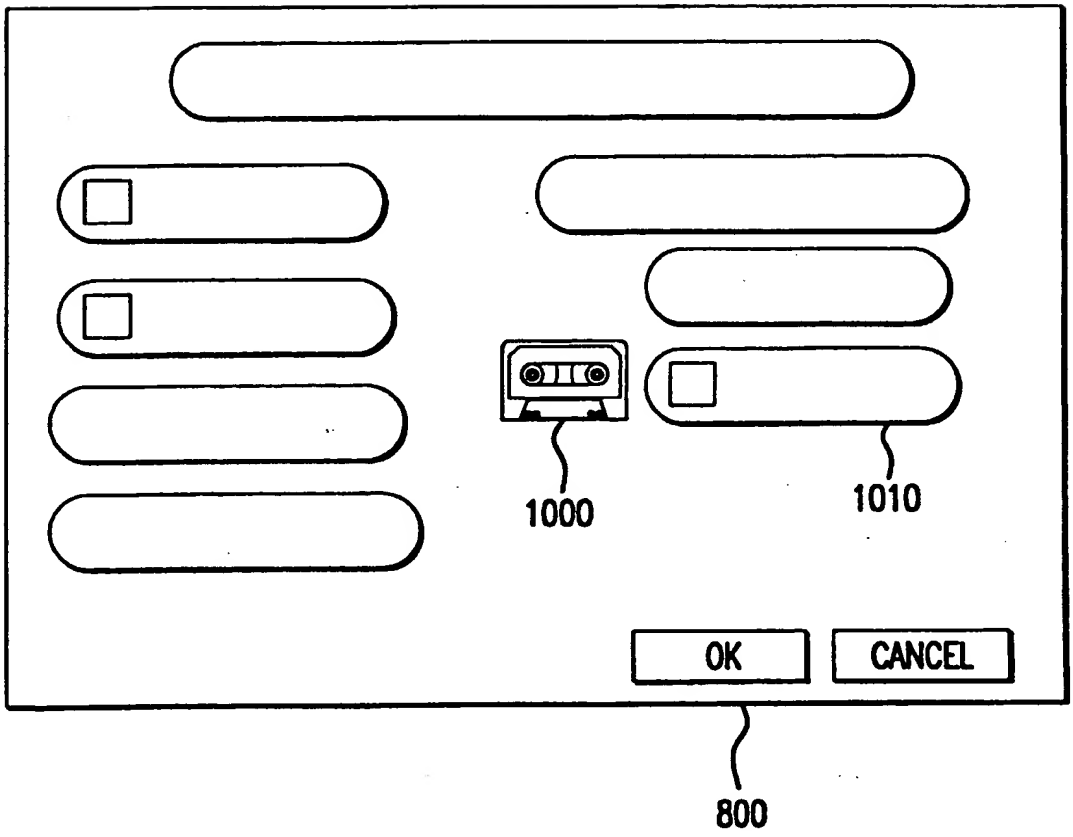

FIG.14

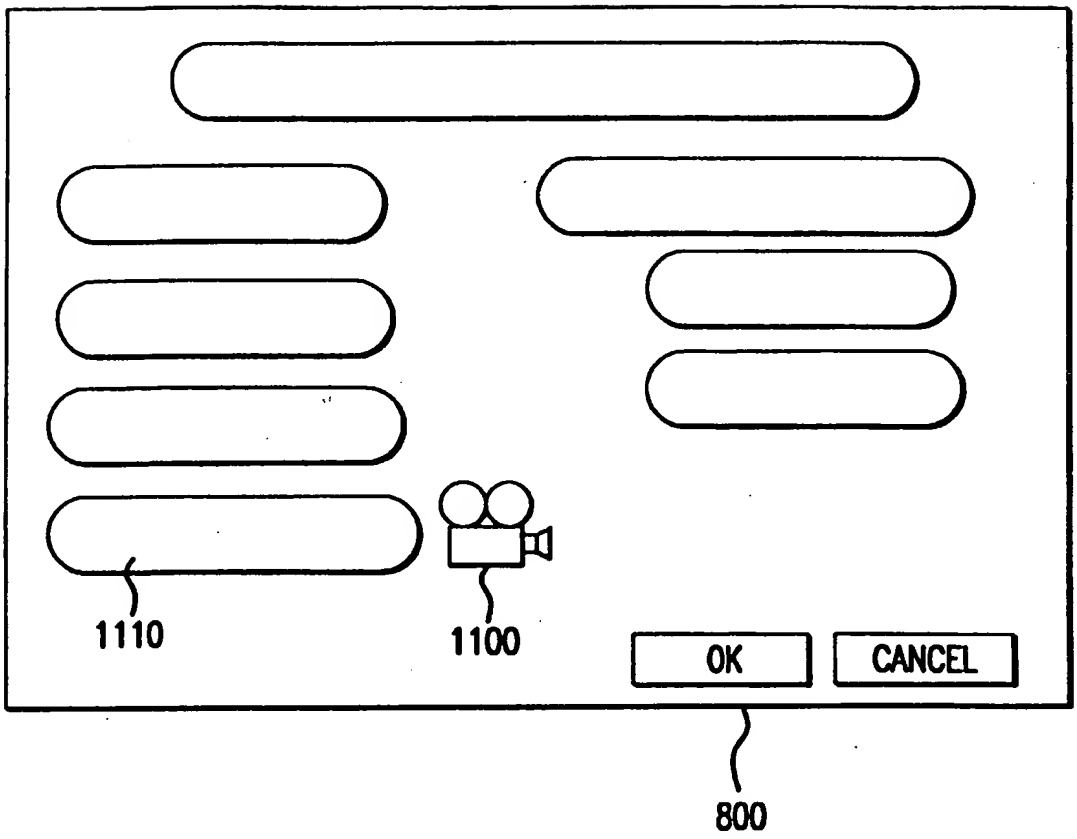

FIG.15

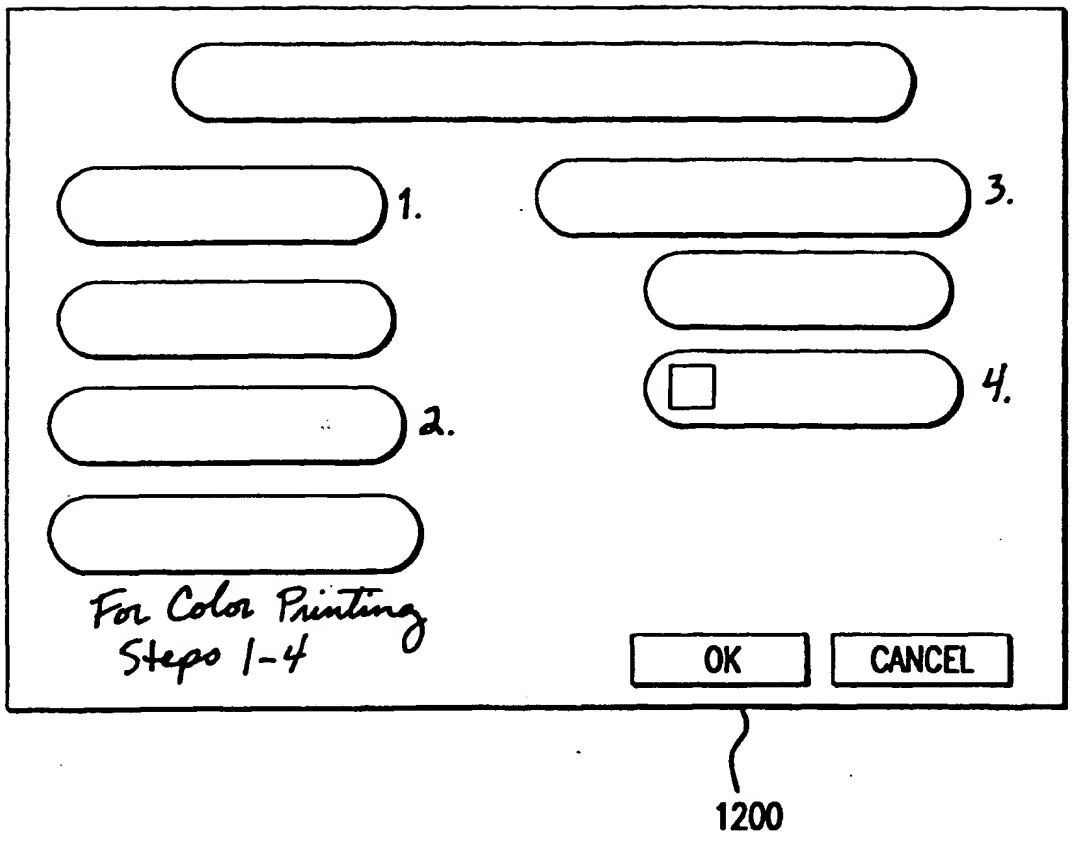

FIG.16

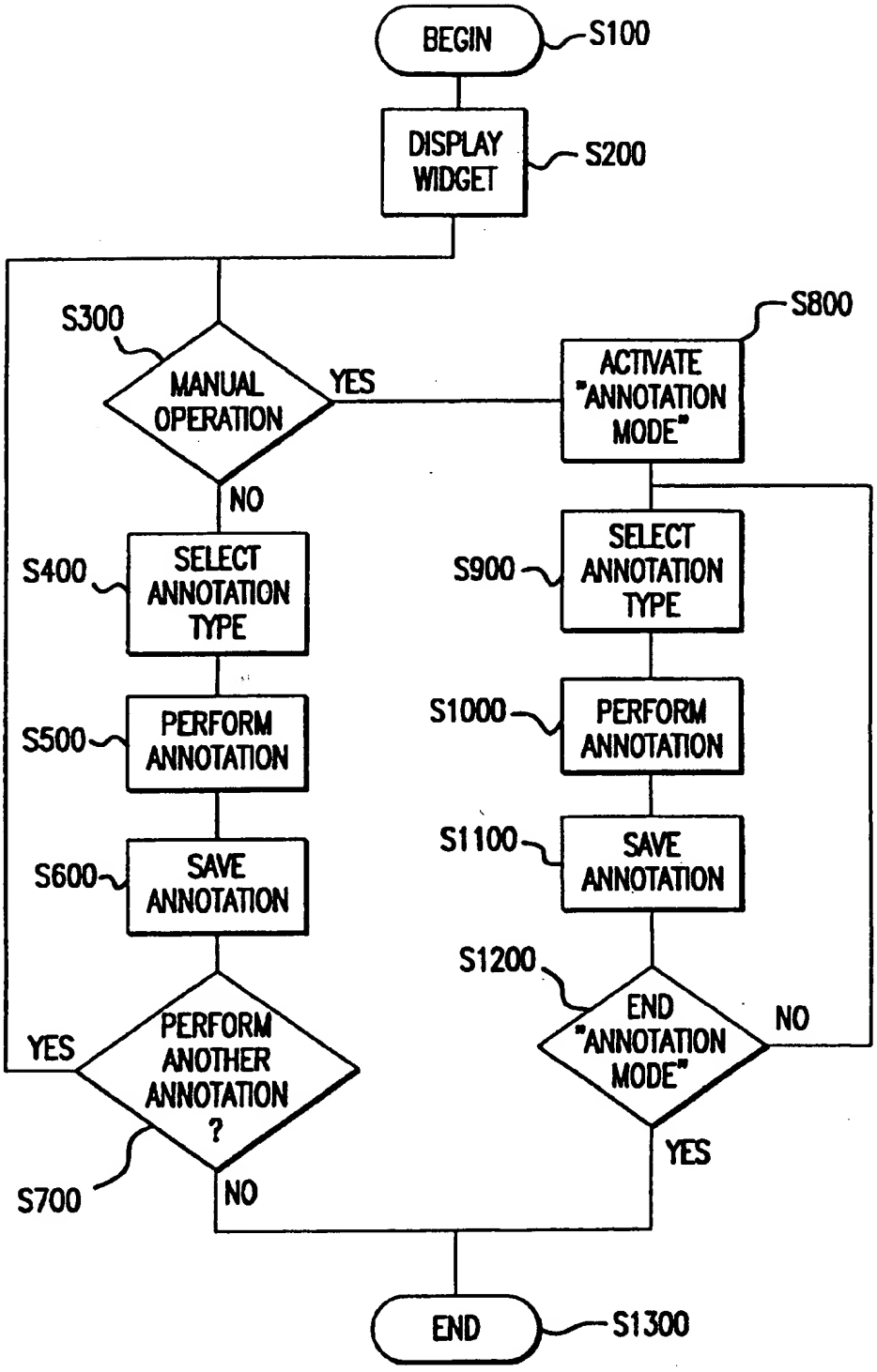
BEGIN
S100
DISPLAY WIDGET
S200
S300
MANUAL OPERATION
YES
S800
ACTIVATE "ANNOTATION MODE"
NO
S400
SELECT ANNOTATION TYPE
S900
SELECT ANNOTATION TYPE
S500
PERFORM ANNOTATION
S1000
PERFORM ANNOTATION
S600
SAVE ANNOTATION
S1100
SAVE ANNOTATION
S1200
YES
PERFORM ANOTHER ANNOTATION ?
END "ANNOTATION MODE"
NO
S700
NO
YES
END
S1300

FIG.17

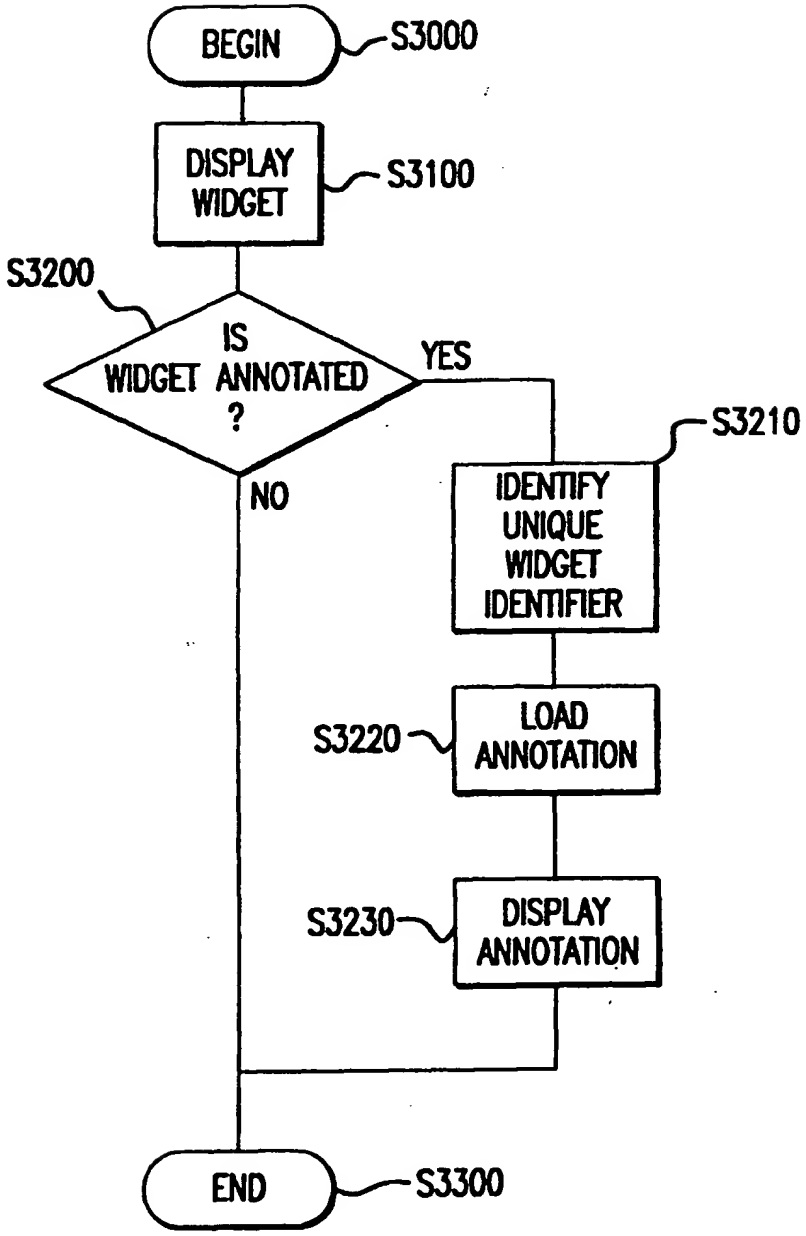
BEGIN
S3000
DISPLAY WIDGET
S3100
S3200
IS WIDGET ANNOTATED ?
YES
NO
S3210
IDENTIFY UNIQUE WIDGET IDENTIFIER
S3220
LOAD ANNOTATION
S3230
DISPLAY ANNOTATION
END
S3300

FIG.18